

Appl. No. 09/902,201
Amdt. dated March 21, 2005
Reply to Office action of December 21, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (Original): A method of communicating information within an enterprise having a process control system and a plurality of information technology systems, the method comprising the steps of:

- generating transactional process control information;
- formatting the transactional process control information based on a first extensible markup language schema to form formatted transactional process control information;
- sending the formatted transactional process control information to a transactional information server via a web services interface;
- mapping the formatted transactional process control information to a second extensible markup language schema associated with one of the plurality of information technology systems to form mapped transactional process control information; and
- sending the mapped transactional process control information to a first one of the plurality of information technology systems.

Claim 2 (Original): The method of claim 1, wherein the step of generating the transactional process control information includes the step of generating one of device alarm information, process condition information and equipment condition information.

Claim 3 (Original): The method of claim 1, wherein the step of formatting the transactional process control information based on the first extensible markup language schema to form the formatted transactional process control information includes the step of using an XML input schema to form the formatted transactional process control information.

Claim 4 (Original): The method of claim 1, wherein the step of sending the formatted transactional process control information to the transactional information server via a web services interface further includes the step of sending the formatted transactional process control information via one of a local area network, a wireless communication link and an internet.

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Claim 5 (Original): The method of claim 1, wherein the step of mapping the formatted transactional process control information to the second extensible markup language schema associated with the one of the plurality of information technology systems to form the mapped transactional process control information includes the step of mapping the formatted transactional process control information to an XML output schema associated with an application that is executed within the first one of the plurality of information technology systems.

Claim 6 (Original): The method of claim 1, wherein the step of mapping the formatted transactional process control information to the second extensible markup language schema associated with the first one of the plurality of information technology systems to form the mapped transactional process control information includes the step of using a data manipulation function to map a first attribute associated with the first extensible markup language schema to a second attribute associated with the second extensible markup language schema, wherein the first and second attributes are different.

Claim 7 (Original): The method of claim 1, wherein the step of sending the mapped transactional process control information to the first one of the plurality of information technology systems includes the step of sending the mapped transactional process control information via one of a local area network, a wireless communication link and an internet.

Claim 8 (Original): The method of claim 1, further comprising the step of determining within the transactional information server whether the formatted transactional process control information is associated with a valid input schema.

Claim 9 (Original): The method of claim 1, further comprising the step of using a business rule to send the mapped transactional process control information to a second one of the plurality of information technology systems.

Claim 10 (Original): A system for use in an enterprise having a plurality of information technology systems, the system comprising:

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a process control system that is adapted to format transactional process control information based on an extensible markup language and a plurality of input schemas, wherein each of the plurality of input schemas is associated with a type of transactional process control information;

a web services interface communicatively coupled to the process control system; and
a transactional data server communicatively coupled to the web services interface and the plurality of information technology systems, wherein the transactional data server is adapted to map transactional process control information that has been formatted based on the extensible markup language and the plurality of input schemas to a plurality of output schemas, wherein each of the plurality of output schemas is associated with an application that is executed within one of the plurality of information technology systems, and wherein the transactional data server is further adapted to send mapped transactional process control information to one of the plurality of information technology systems.

Claim 11 (Original): The system of claim 10, wherein the process control system is adapted to format the transactional process control information using XML.

Claim 12 (Original): The system of claim 10, wherein the plurality of input schemas includes an input schema associated with one of a device alert, an equipment condition and a process condition.

Claim 13 (Original): The system of claim 10, whercin the plurality of information technology systems are communicatively coupled via a communication network including one of a local area network and an internet.

Claim 14 (Original): The system of claim 10, wherein the transactional data server is further adapted to use a data manipulation function to map a first attribute of a particular input schema to a second attribute of a particular output schema, wherein the first and second attributes are different.

Claim 15 (Original): The system of claim 10, wherein the transactional data server is further adapted to use a business rule to send the mapped transactional process control information to the one of the plurality of information technology systems.

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Claim 16 (Original): The system of claim 10, wherein the transactional data server is further adapted to determine whether transactional process control information is associated with a valid input schema.

Claim 17 (Original): A method of processing transactional process control data, comprising the steps of:

wrapping the transactional process control data in an XML wrapper to form XML wrapped transactional process control data;

sending the XML wrapped transactional process control data via a web services interface and a communication network to an XML data server;

mapping the XML wrapped transactional process control data to an XML output schema associated with one of a plurality of information systems that are communicatively coupled to the communication network to form mapped XML transactional process control data; and

sending the mapped XML transactional process control data to the one of the plurality of information systems via the communication network.

Claim 18 (Original): The method of claim 17, wherein the step of wrapping the transactional process control data in the XML wrapper to form the XML wrapped transactional process control data includes the step of wrapping transactional process control data containing information associated with one of a device alert, an equipment condition and a process condition.

Claim 19 (Original): The method of claim 17, wherein the step of mapping the wrapped XML transactional process control data to the XML output schema associated with the one of the plurality of information systems to form mapped XML transactional process control data includes the step of using a data manipulation function to map a first attribute associated with an XML input schema to a second attribute associated with the XML output schema, wherein the first and second attributes are different.

Claim 20 (Original): The method of claim 17, wherein the step of sending the mapped XML transactional process control data to the one of the plurality of information

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systems via the communication network includes the step of sending the mapped XML transactional process control data to the one of the plurality of information systems via one of an internet and a local area network.

Claim 21 (Original): The method of claim 17, wherein the step of sending the mapped XML transactional process control data to the one of the plurality of information systems via the communication network includes the step of sending the mapped XML transactional process control data to one of an order processing system, an accounting system, a product shipping and administration system, a product inventory control system, a quality assurance system, a maintenance management system, a procurement system, a material energy and control system, a production scheduling system, a supplier's system, a customer's system and a process control plant.

Claim 22 (Original): A method of processing transactional process control data, comprising the steps of:

encapsulating the transactional process control data in a markup language wrapper to form encapsulated transactional process control data;

sending the encapsulated transactional process control data via a web services interface and a communication network to a markup language data server;

mapping the encapsulated transactional process control data to an output schema associated with one of an enterprise resource planning system and a manufacturing execution system to form mapped transactional process control data; and

sending the mapped transactional process control data to the one of the enterprise resource planning system and the manufacturing execution system.

Claim 23 (Original): The method of claim 22, wherein the step of encapsulating the transactional process control data in the markup language wrapper to form the encapsulated transactional process control data includes the step of using XML to encapsulate the transactional process control data.

Claim 24 (Original): The method of claim 22, wherein the step of sending the encapsulated transactional process control data via the web services interface and the

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communication network to the markup language data server includes the step of sending the encapsulated process control data via one of a local area network and an internet.

Claim 25 (Original): The method of claim 22, wherein the step of mapping the encapsulated transactional process control data to the output schema associated with the one of the enterprise resource planning system and the manufacturing execution system to form the mapped transactional process control data includes the step of using a data manipulation function that maps a first attribute associated with the encapsulated transactional process control data to a second attribute associated with the output schema, wherein the first and second attributes are different.

Claim 26 (Original): The method of claim 22, wherein the step of sending the mapped transactional process control data to the one of the enterprise resource planning system and the manufacturing execution system includes the step of sending the mapped transactional process control data via one of a local area network and an internet.

Claim 27 (Original): A method of communicating transactional process control information within an enterprise, comprising the steps of:

formatting the transactional process control information based on a first extensible markup language schema to form formatted transactional process control information;

sending the formatted transactional process control information to a transactional information server;

mapping the formatted transactional process control information to a second extensible markup schema associated with a process control system to form mapped transactional process control information; and

sending the mapped transactional process control information to the process control system via a web services interface.

Claim 28 (Original): The method of claim 27, wherein the step of formatting the transactional process control information based on the first extensible markup language schema to form the formatted transactional information includes the step of using an XML input schema to format the transactional process control information.

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Claim 29 (Original): The method of claim 27, wherein the step of mapping the formatted transactional process control information to the second extensible markup schema associated with the process control system to form the mapped transactional process control information includes the step of mapping the formatted transactional process control information to an XML output schema.

Claim 30 (Original): The method of claim 27, wherein the step of sending the mapped transactional process control information to the process control system via a web services interface further includes the step of sending the mapped transactional process control information to the process control system via one of a local area network and an internet.

Claim 31 (Original): A method of processing a device alarm for use within an enterprise including a process control system and a maintenance management system, comprising the steps of:

- formatting the device alarm based on an XML input schema to form an XML device alarm;
- sending the XML device alarm to an XML transaction server;
- mapping the XML device alarm to an XML output schema associated with the maintenance management system to form a mapped XML device alarm; and
- sending the mapped XML device alarm to the maintenance management system.

Claim 32 (Original): A method of processing equipment condition information for use within an enterprise including a process control system and an information technology system, comprising the steps of:

- formatting the equipment condition information based on an XML input schema to form an XML message;
- mapping the XML message to an XML output schema associated with the information technology system to form a mapped XML message; and
- sending the mapped XML message to the information technology system.

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Claim 33 (Original): A method of processing process condition information for use within an enterprise including a process control system and an information technology system, comprising the steps of:

formatting the process condition information based on an XML input schema to form an XML message;

mapping the XML message to an XML output schema associated with the information technology system to form a mapped XML message; and

sending the mapped XML message to the information technology system.